

In the Claims

This listing of claims replaces all prior versions, and listings, of claims in the application.

1. (Currently Amended) A double side polishing method for at least automatically rotating a plurality of carriers holding works to be polished, between an upper rotary surface plate and a lower rotary surface ~~plates~~ plate to simultaneously polish both surfaces of a plurality of works held by the plurality of carriers, comprising the steps of:

merging each work with the carrier outside the lower rotary surface plate before supplying the work onto the lower rotary surface plate; and

supplying the work merged with the carrier outside the lower rotary surface plate, onto the lower rotary surface plate in a merged state,

in which, before merging the work with the carrier outside the lower rotary surface plate, the carrier is conveyed from a carrier housing section that houses the carrier to a carrier aligning section and ~~aligned, the work aligned at another place~~ positioned at a specified location, the work positioned at a location different from the carrier aligning section and is merged with the carrier ~~aligned at~~ positioned at the specified location by the carrier aligning section, and the work merged with the carrier ~~[[at]]~~ by the carrier aligning section is supplied from the carrier aligning section onto the lower rotary surface plate, and

such that when the work merged with the carrier is supplied to the lower rotary surface plate, an indexing operation of rotating the lower rotary surface plate through a predetermined angle ~~for each operation is performed~~ to supply the work and carrier to their specified position, and the operation of indexing the lower surface plate is performed so as ~~not to~~ prevent ~~cause~~ carriers already placed on the lower rotary surface plate ~~to move~~ from moving relative to the lower rotary surface plate.

2. (Previously Presented) The double side polishing method according to claim 1, wherein a polished work is ejected from the lower rotary surface plate.

3-4. (Cancelled)

5. (Currently Amended) A double side polishing method using a double side polishing apparatus, comprising:

housing a plurality of carriers in a carrier housing section;

aligning each of the carriers;

aligning a corresponding one of a plurality of works to be polished before merging each with an associated one of the carriers;

conveying each of the aligned works into the corresponding aligned carrier so as to merge each of the works with a corresponding one of the carriers outside a polishing apparatus main body;

supplying each of the works merged with the corresponding carrier outside the polishing apparatus main body to a lower rotary surface plate in a merged state;

automatically rotating [[a]] the plurality of carriers holding the works to be polished between an upper and the lower rotary surface plates of [[a]] the polishing apparatus main body;
and

simultaneously polishing both surfaces of [[a]] the plurality of the works held by the plurality of carriers[;].

~~merging each of the works with a corresponding one of the carriers outside the polishing apparatus main body;~~

~~supplying each work merged with the corresponding carrier outside the polishing apparatus main body, to the lower rotary surface plate in a merged state; and~~

~~housing the plurality of carriers in a carrier housing section,~~

~~said merging step including~~

~~aligning each of said carriers;~~

~~aligning a corresponding one of the works before merging it with an associated one of the carriers; and~~

~~conveying the aligned work into the corresponding aligned carrier.~~

6. (Previously Presented) The double side polishing method according to claim 5, further comprising a step of ejecting the work polished on the lower rotary surface plate to an exterior of the polishing apparatus main body while remaining merged with the carrier.

7. (Cancelled)

8. (Withdrawn) A double side polishing method for at least automatically rotating a plurality of carriers holding works to be polished between an upper and a lower rotary surface plates to simultaneously polish both surfaces of a plurality of works held by the plurality of carriers, comprising:

providing a plurality of upper fluid nozzles in the lower rotary surface plate and/or lower fluid nozzles in the lower rotary surface plate opposite to the plurality of works between the rotary surface plates, the nozzles being opened in a surface of the surface plate, and on separating the upper and lower rotary surface plates from each other after double side polishing has been completed between the upper and lower rotary surface plates; and

causing the lower fluid nozzles to suck the plurality of works in order to hold them on the lower rotary surface plate.

9. (Withdrawn) The double side polishing method according to Claim 8, wherein the plurality of fluid nozzles opened in the surface of the surface plate are provided at least in the upper rotary surface plate so that when the upper and lower rotary surface plates separate from each other, a liquid is injected from the fluid nozzles provided in the upper rotary surface plate.

10. (Withdrawn) A double side polishing method using a double side polishing apparatus, the method comprising:

automatically rotating a plurality of carriers holding works to be polished, between an upper and a lower rotary surface plates;

simultaneously polishing both surfaces of a plurality of the works held by the plurality of carriers, in which a plurality of fluid nozzles are provided in the lower rotary surface plate opposite to the plurality of works between the rotary surface plates, the nozzles being opened in a surface of the surface plate, and in which the plurality of fluid nozzles provided in the lower rotary surface plate are connected to a suction mechanism.

11. (Withdrawn) The double side polishing method according to claim 10, wherein the plurality of fluid nozzles opened in the surface of the surface plate are provided in the upper rotary surface plate and connected to a liquid supply mechanism.

12. (Withdrawn) A double side polishing method using a double side polishing apparatus, the method comprising:

rotating a plurality of carriers holding works to be polished between an upper and a lower rotary surface plates of a polishing apparatus main body;

simultaneously polishing both surfaces of a plurality of works held by the plurality of carriers;

auto rotating between the upper and lower rotary surface plates similarly to the carriers to house a plurality of processing bodies for processing polishing cloths installed on opposite surfaces of the upper and lower rotary surface plates; and

supplying the plurality of processing bodies between the upper and lower rotary surface plates and ejecting used processing bodies from between the upper and lower rotary surface plates.

13. (Withdrawn) The double side polishing method according to claim 12, wherein said processing bodies comprise brushes that clean the polishing clothes and/or dressers that level them.

14. (Withdrawn) The double side polishing method according to claim 12, further comprising supplying unpolished works between the upper and lower rotary surface plates and ejecting polished works from between the upper and lower rotary surface plates.

15. (Previously Presented) The double side polishing method according to claim 5, further comprising:

polishing both surfaces of the works using a pair of rotary surface plates;

eccentrically holding the works using a plurality of gear-shaped carriers arranged in a periphery of a rotation center between the pair of rotary surface plates;

synchronously rotating the pair of rotary surface plates to engage the plurality of carriers arranged about a center gear; and

engaging a plurality of auto rotation mechanisms distributed around the plurality of carriers with a carrier located inside the rotation mechanisms to hold and automatically rotate said carrier at its specified position in corporation with the center gear.

16. (Previously Presented) The double side polishing method according to claim 15, wherein each of the auto rotation mechanisms engages with the carrier at one or two or more positions and has one or more rotary gears each having a tooth trace along a rotation axis thereof.

17. (Previously Presented) The double side polishing method according to claim 16, wherein said rotary gear is movable in a rotation axis direction.

18.-19. (Cancelled)

20. (Previously Presented) The double side polishing method according to claim 15, wherein each of the auto rotation mechanisms is configured to automatically rotate the carrier by means of a worm gear.

21. (Previously Presented) The double side polishing method according to claim 20, wherein said worm gear is made of a resin.

22. (Previously Presented) The double side polishing method according to claim 5, including:

arranging the plurality of carriers holding the wafers between the upper and lower rotary surface plates at predetermined intervals in the rotation direction,

engaging each carrier with a sun gear located in the center of the surface plate and inner gears located in a periphery thereof, to cause each carrier to make a planetary motion between the upper and lower rotary surface plates,

supplying grinding liquid between upper and lower rotary surface plates via a plurality of supply passages in the upper rotary surface plate, and wherein a sun gear is integrated at a central part of the lower rotary surface plate.

23. (Previously Presented) The double side polishing method according to claim 22, wherein the upper rotary surface plate is rotationally driven independently of the lower rotary surface plate.

24.-26. (Cancelled)

27. (Currently Amended) The double side polishing method according to claim 5, ~~further comprising: wherein~~

each of the works is a wafer, the steps of conveying and supplying including transferring and loading the wafers while supported in a horizontal direction orientation; and the method further comprising applying a suction to a top surface of said wafer each of the wafers, a top sucking chuck made of an outer-circumference annular sucking type that comes in contact with a top surface of a periphery of ~~said wafer~~ each of the wafers in the form of an annulus ring and that has a plurality of suction ports in the annular contact surface, the suction ports being formed in a circumferential direction at intervals.

28. (Currently Amended) The double side polishing method according to claim 5, ~~further comprising: wherein~~

each of the works is a wafer, the steps of conveying and supplying including
transferring and loading the wafers while supported in a horizontal ~~direction~~ orientation; and

the method further comprising supporting said-wafer each of the wafers from below
while sucking a bottom surface thereof, a bottom sucking chuck made of an outer-circumference
arc-shaped sucking type that comes in contact with a circumferential part of a bottom surface of
a periphery of ~~said-wafer~~ each of the wafers in the form of a circular arc and that has a plurality
of suction ports in the circular arc contact surface, the suction ports being formed in a
circumferential direction at intervals.